Directorate of Intelligence

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Soviet SS-20 IRBM Equipment Update (C)

A Reference Aid

IA 84-10056
August 1984
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Summary

Information available as of 1 June 1984 was used in this report.

This research aid is a supplement to a 1981 research paper which reviewed the basic table of organization and equipment of Soviet SS-20 intermediate-range ballistic missile regiments.

Since 1980 several new types of support units and pieces of equipment have been identified in association with the SS-20 system. These include:

- Two new types of mobile radio relay stations at the regimental level.
- Two new types of communications equipment at the divisional level, including a satellite communications vehicle and a mobile radio relay unit.
- Three new types of divisional support units, including helicopter detachments and mobile air defense and nuclear-biological-chemical decontamination units.
- SS-20-unique driver training vehicles at nearly all regimental bases and divisional training facilities.
- Two new types of missile support vehicles.
- Two new features on SS-20 missile support vehicles—a turret, which may serve as a ground defense gun mount or an optical sighting device; and modular work stations, which may be used in several functional roles.

The introduction of these units and pieces of equipment does not dramatically change the capabilities of the SS-20 system. However, it does show that the Soviets are continuing efforts to improve the capabilities and redundancy of the SS-20 command and control network, and to enhance the field survivability of the SS-20 system.

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Contents

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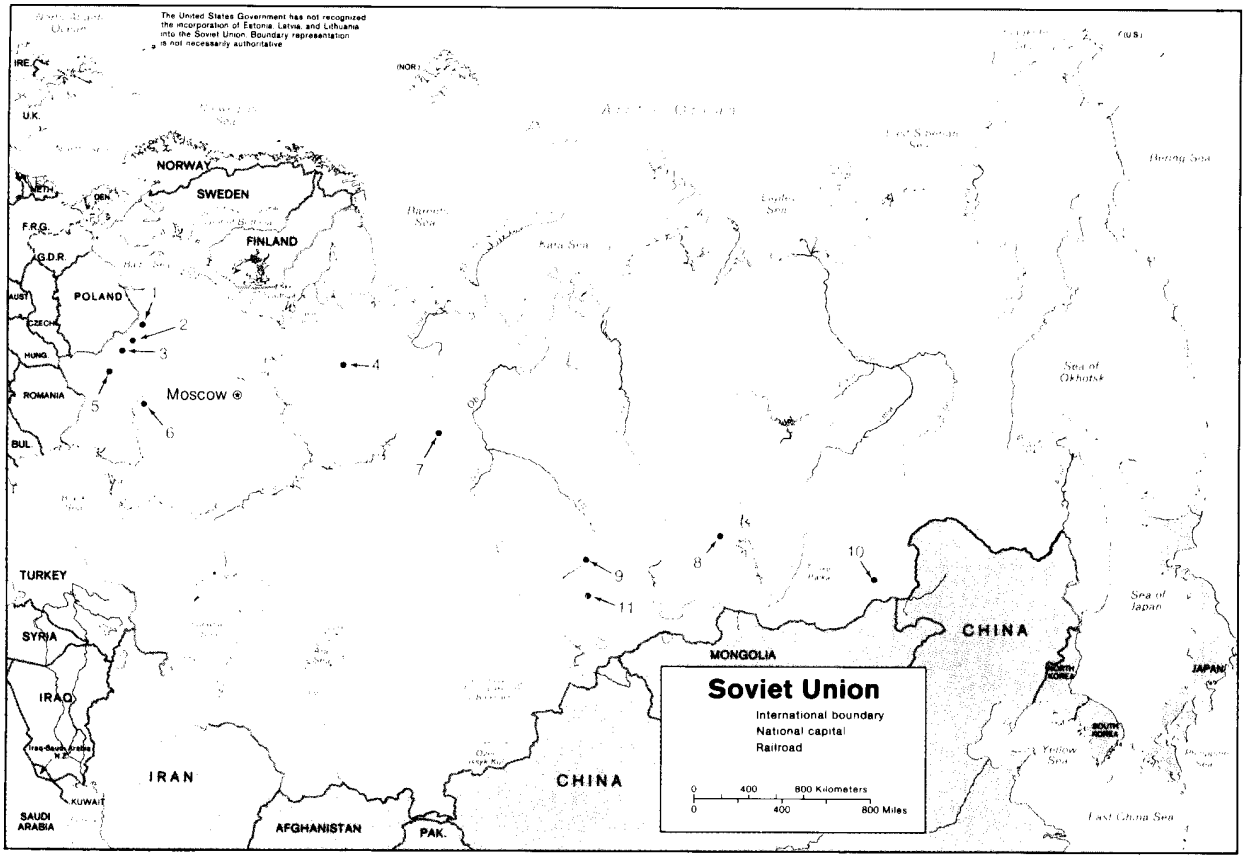
Figure 1
Location of Soviet SS-20 IRBM Divisions and Helicopter Detachments



1 Postavy SS-20 Division
Divisional Heliport
2 Lida SS-20 Division
3 Lutsk SS-20 Division
4 Yurya SS-20 Division
Divisional Heliport
5 Mozyr SS-20 Division
Divisional Heliport
6 Romny SS-20 Division
Divisional Heliport
7 Verkhnyaya Salda SS-20 Division
Divisional Heliport
8 Kansk SS-20 Division
Divisional Heliport
9 Novosibirsk SS-20 Division
Divisional Heliport
10 Drovyanaya SS-20 Division
Divisional Heliport
11 Barnaul SS-20 Division

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Soviet SS-20 IRBM Equipment Update (C)

Introduction

The basic table of organization and equipment (TO&E) of a Soviet SS-20 intermediate-range ballistic missile (IRBM) regiment has remained relatively stable since 1980. At that time, five functional areas were identified as typical of an SS-20 regimental base: operations, command and control (C2), , and ground support equipment (GSE) storage. These areas contain a total of 110 to 170 vehicles, depending on the extent of available support facilities. (S

This report is a supplement to a research paper on Soviet SS-20 regimental TO&E prepared in 1981.[1] That paper discusses the standard complement of equipment housed at an SS-20 regimental base as of late 1980. This report presents updated information obtained from subsequent observations, and deals only with additional equipment identified at the divisional and regimental levels since 1980. Some of the equipment described in this report has been observed only in isolated instances. Based on past practices, however, deployment is expected to be forcewide throughout the 48 bases that currently make up the 11 Soviet SS-20 divisions (figure 1). Therefore, this equipment is presented as standard divisional or regimental assets. (S

Mobile Communications Units

Since 1980 the Soviets have deployed four new mobile radio systems with their SS-20 forces to provide additional capability and redundancy to the SS-20 command and control network. At the regimental level, R-400/404 radio stations and R-412 troposcatter sets have been identified. At the divisional level, two probable mobile communications units have been observed: a possible new type of Twin Ear troposcatter radio relay set and a Wood Bine satellite communications vehicle. (S

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Mobile communications equipment observed at the regimental level includes the following types and numbers of vehicles (figure 2):

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R-400/404 Radio Station	
Antenna van	1
Transmitter/receiver van	1
Generator van	1
R-412 Troposcatter Radio Relay Set	
Mast truck	1
Antenna/transmitter/receiver van	1
Generator van	1

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(S

Equipment observed at the divisional level includes the following types and numbers of mobile communications vehicles (figure 3):

Twin Ear Troposcatter Radio Relay Unit	
13.7-meter-long generator missile support vehicle (MSV)	1
Twin Ear transmitter/receiver vans	2
Wood Bine Satellite Communications Vehicle	
Antenna/transmitter/receiver van	1

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[1] CIA, IS 81-10048 (Secret uly 1981, *Soviet SS-20 IRBM Regimental Equipment and Equipment Facilities.* (S)

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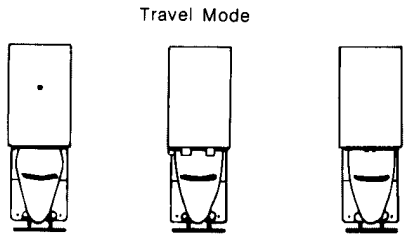
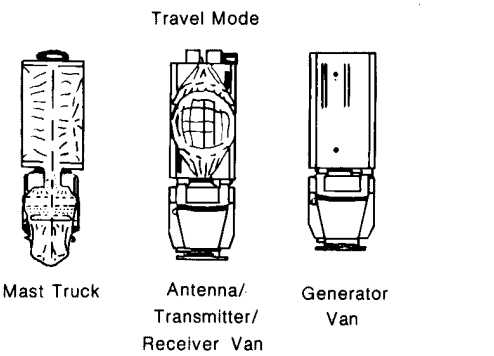
Figure 2
New Mobile Communications Vehicles Identified With the SS-20 IRBM—Regimental Level

R-400/404 Radio Station



R-412 Troposcatter Radio Relay Set



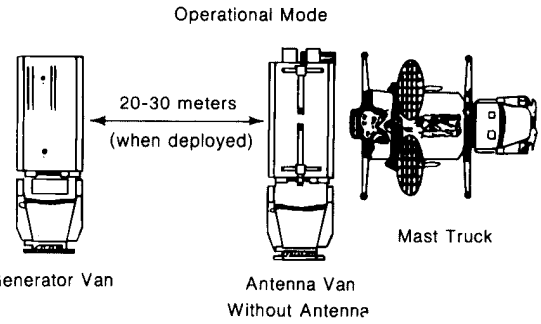
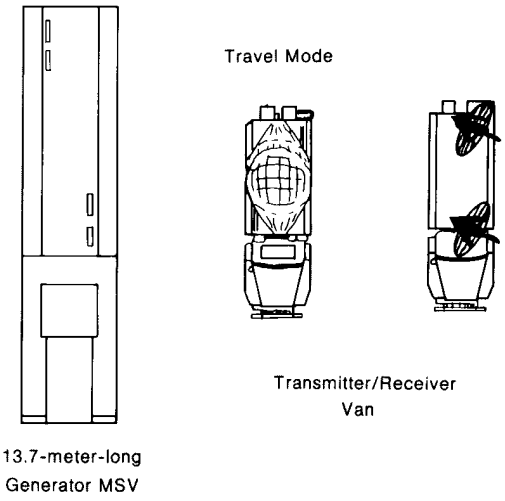
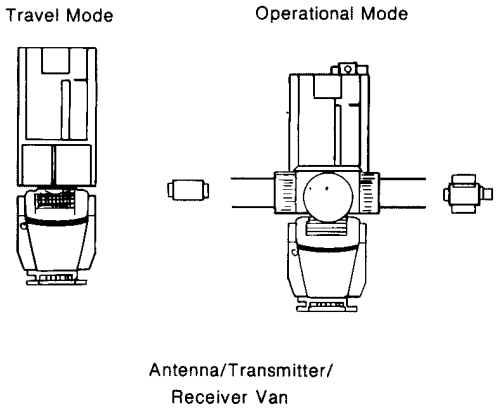


Figure 3
New Mobile Communications Vehicles Identified With the SS-20 IRBM—Divisional Level

Twin Ear Troposcatter Radio Relay Set



Wood Bine Satellite Communications Vehicle



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The R-400/404 radio station transmits and receives signals through the UHF and lower SHF (super-high-frequency) bands, operating as a relay station or as a terminal. An R-400/404 station has been operating at Yurya Mobile IRBM Base 3 since 1982, probably as a terminal for base communications (figure 4). A possible R-400/404 station employed as a terminal had been imaged previously during a field exercise at Novosibirsk in 1979.

(S

The R-412 troposcatter radio relay set has the capability to elevate two parabolic antennas up to 20 meters above ground level, providing a clear line of sight beyond the horizon even in heavily wooded areas. To date, the R-412 troposcatter set has been observed at only one field deployment, an SS-20 communications unit at Novosibirsk (figure 5). The set was observed 24 kilometers from the nearest base, indicating its role in remote deployments.

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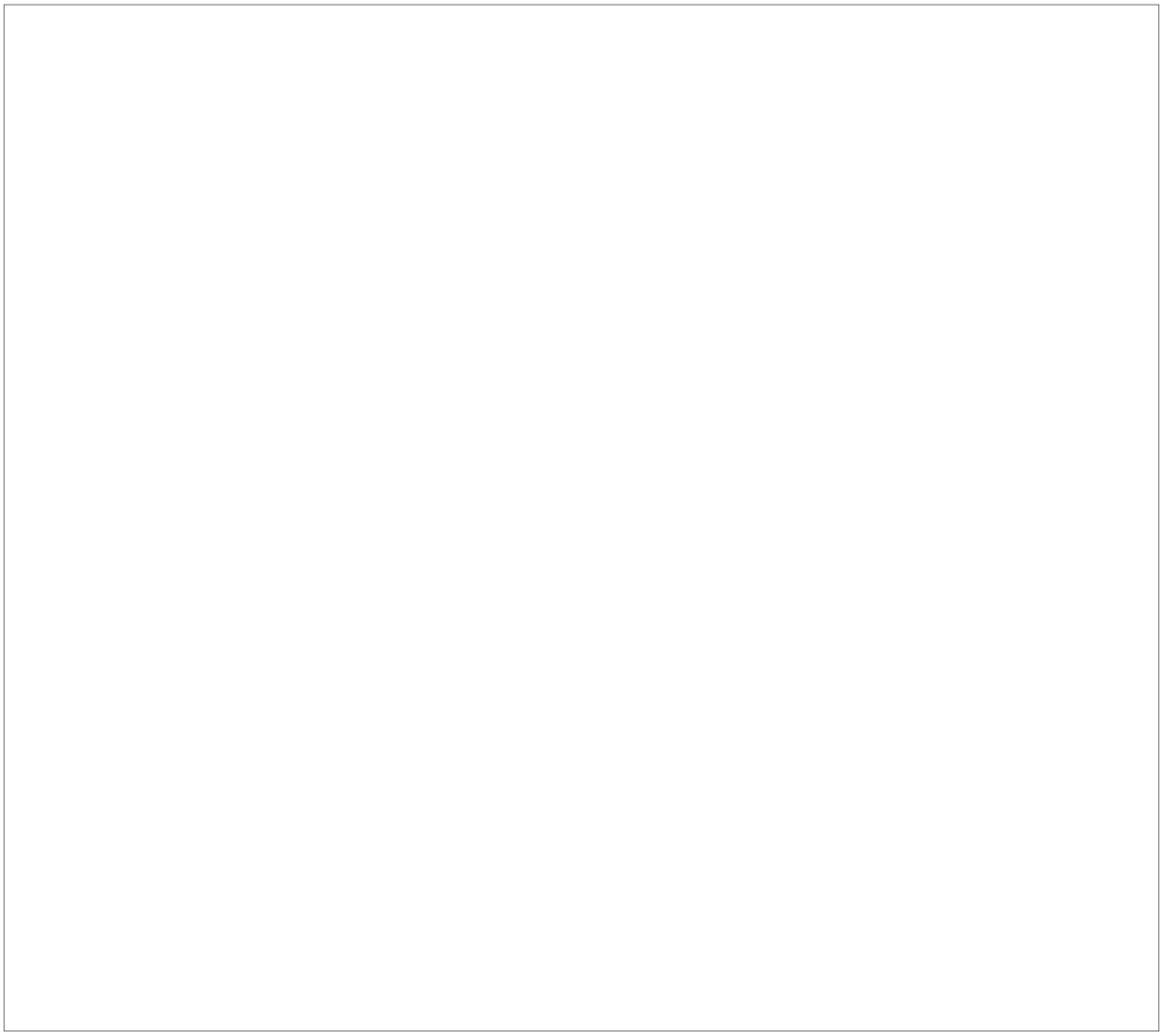

A possible new type of Twin Ear troposcatter radio relay set has been seen at two SS-20 divisions: Drovyanaya and Verkhnyaya Salda. The Twin Ear set generally consists of two vehicles, a Twin Ear van and a generator van. At both Drovyanaya and Verkhnyaya Salda, however, two Twin Ear vans were present, and the vans apparently were powered by a MAZ missile support van (MSV) (figure 6). The introduction of this three-vehicle set may be unique to the Soviet Strategic Rocket Forces (SRF). The additional Twin Ear antenna van in this new type of radio relay set should double the current capability for simultaneous reception and rebroadcast of signals between a divisional or regimental command post and a remotely deployed SS-20 command and control (C2) unit. The addition of the relay unit will also allow SS-20 C2 units to deploy at greater distances.

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The Wood Bine satellite communications vehicle has been observed at three of the 11 SS-20 divisional headquarters: Drovyanaya, Verkhnyaya Salda, and Barnaul. At Drovyanaya, the Wood Bine has replaced the previously observed Park Drive satellite communications set. Because the Wood Bine consists of only one vehicle, it provides a simpler and more versatile system than the four-vehicle Park Drive unit. Figure 7 shows the Wood Bine vehicle observed at Verkhnyaya Salda. (S

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Divisional Helicopter Detachments

Since the late 1970s, the SRF has deployed helicopter detachments to seven of its 11 SS-20 IRBM divisions (figure 1). These detachments provide an airborne command post capability and perform a variety of technical and logistical support functions, including personnel and equipment transport, area reconnaissance, and security surveillance. Each of the seven detachments is comprised of from six to 10 MI-8/HIP helicopters and up to 50 associated support vehicles. These support vehicles are assigned to operations, signals and communications, and airfield support subunits.[2] Figure 8 shows the heliport at Novosibirsk, a typical divisional heliport. (S

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[2]Further discussion of SS-20 helicopter detachment support units is provided in two CIA reports: IS 82-10015 (Secret

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April 1982, *Helicopter Units Attached to SS-20 IRBM Divisions,*

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and IAM 83-10071 (Secre May 1983, *New SS-20 Helicopter Detachment.* (S)

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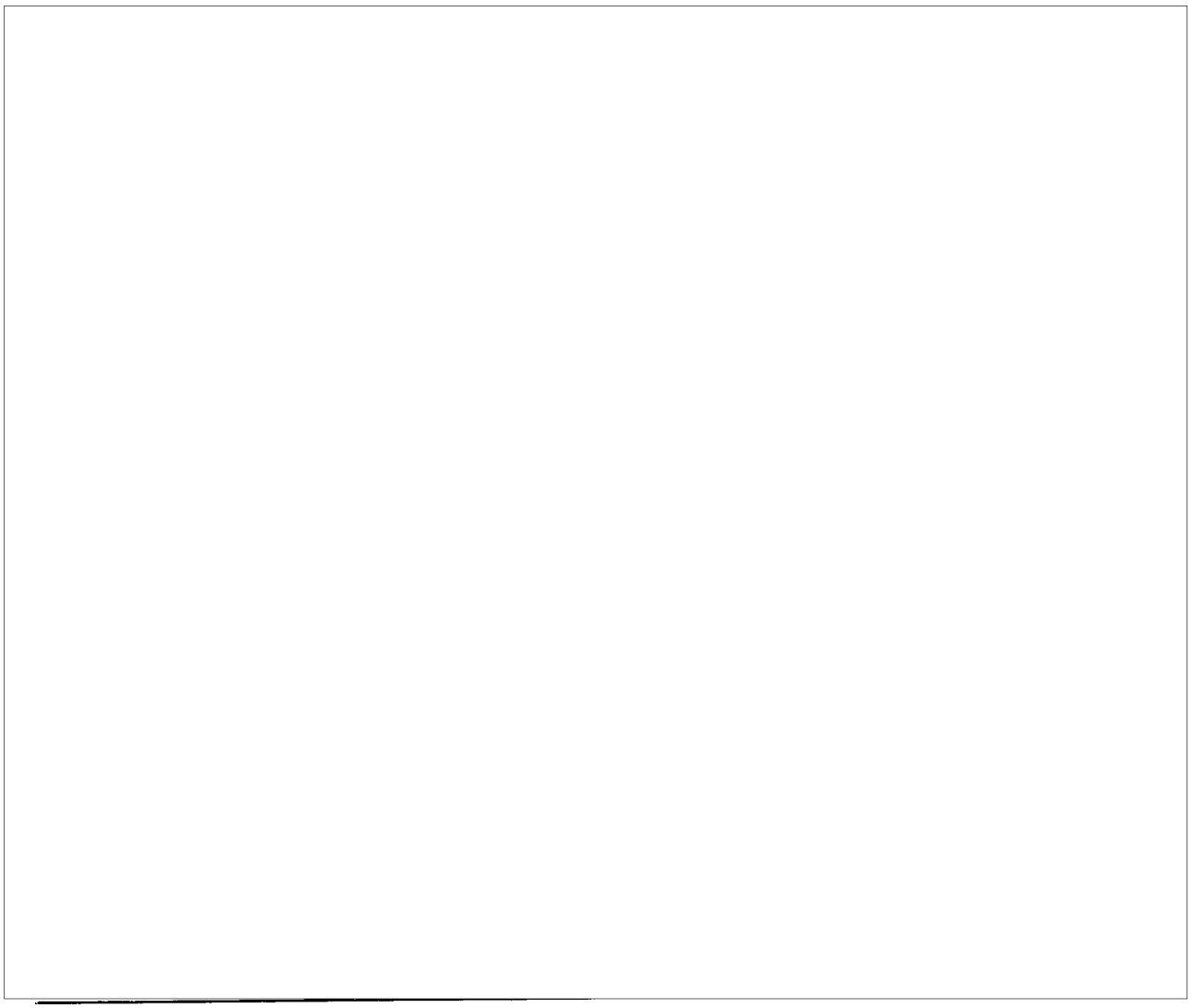

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Non-SRF Divisional Support Units

Since 1980, two types of support units drawn from non-SRF forces have been identified exercising with SS-20 divisions: a mobile air defense platoon, observed at Drovyanaya, and a mobile decontamination unit, seen at Novosibirsk. Although these support units have not yet been identified at other SS-20 IRBM divisions, observations of similar units exercising at SRF ICBM divisions indicate that such units probably will be used to provide support to the SRF forcewide. The units observed at Drovyanaya and Novosibirsk are probably parts of larger non-SRF military units, normally garrisoned elsewhere, that would be detached to SS-20 divisions to support wartime operations. (S

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Mobile Air Defense Units

Mobile surface-to-air missile (SAM) units would be positioned with SS-20 IRBM forces to provide air defense for launch and C2 units when they deploy away from their divisional garrison areas. From mid-1982 through early 1983, elements of an SA-9 platoon were imaged within the secured operations area of Drovyanaya Mobile IRBM Base 3 (figure

9). This was the first identification of the SA-9 system supporting the SS-20. The SA-9, a tactical air defense system, is designed to counter subsonic and rotary-wing (helicopter) aircraft; it is effective at ranges out to 7 kilometers and at altitudes below 6 kilometers. We believe the platoon was field deployed with the SS-20 launch battalions, indicating a probable wartime air defense role with the SS-20 system. (S

A typical SA-9 missile platoon, like the one seen at Drovyanaya, includes the following types and numbers of vehicles (figure 10):

Transporter-erector-launchers (TELs)	4
GAZ-66 resupply vehicles	2
BTR-60 PA command vehicle	1

(S

The SA-9 TEL is a modified BRDM-2 amphibious reconnaissance vehicle chassis with four missiles mounted on a single rotating pedestal. The GAZ-66 resupply vehicle is believed to have a load capacity of 24 missile canisters; it also has the mobility to operate with the TEL except in amphibious operations. The BTR-60 PA command vehicle is a basic amphibious armored personnel carrier modified with extra communications systems. (S

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SA-4 units have also been observed near the Drovyanaya SS-20 remote site and exercising in the vicinity of SS-20 deployment areas to the north of the Drovyanaya IRBM/ICBM complex. It is not yet possible, however, to associate the SA-4 with any SS-20 air defense role, because this is an established SAM training area for the SA-4 brigade garrisoned at Domna, as well as for SA-4 and SA-8 units exercising at the SAM training facility at Chita. (S

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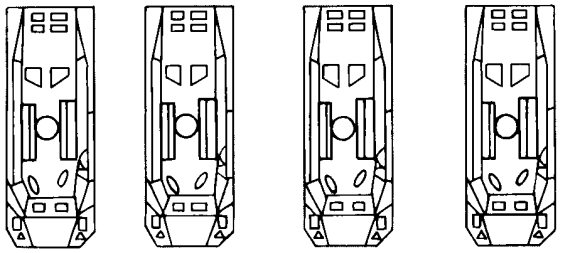
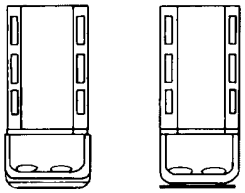
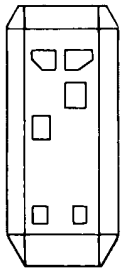
Figure 10
Vehicles Associated With SS-20 SA-9 SAM Platoon



Transporter-Erector-Launcher (TEL)



GAZ-66 Resupply Vehicle



BTR-60 PA Command Vehicle

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Mobile Decontamination Units

The primary role of a mobile decontamination unit, like the one observed at Novosibirsk in June 1983, is to maintain the combat capabilities of SS-20 IRBM forces in a nuclear-biological-chemical (NBC) environment. A decontamination unit can provide an SS-20 division with several important NBC survival capabilities:

- Location and marking of boundaries of chemically and radiologically contaminated areas along road march routes.
- Decontamination of roads and terrain selected for deployment.
- Decontamination of SS-20 vehicle exteriors and equipment.
- Decontamination of clothing and provision of showers for SS-20 crews. (S [redacted] 25X1 25X1

The mobile decontamination unit observed at Novosibirsk included several types of vehicles (figures 11 and 12):

ARS-14 decontamination vehicles	3
TMS-65 decontamination vehicles	2
Truck tank trailers (towed by TMS-65 vehicles)	2
AGV-3 decontamination vehicles (1 set)	3
BRDM-2 RKH reconnaissance vehicles	5
UAZ-69 RKH reconnaissance vehicles	4
RKM reconnaissance vehicle	1
Van-body and flatbed trucks (not shown)	2-6

(S [redacted] 25X1

The three types of decontamination vehicles in this unit provide specialized decontamination capabilities. The ARS-14 is designed to wash down roads and terrain to remove light contamination, and to disinfect combat weapons and equipment. ARS-14 vehicles would probably be used in conjunction with the SS-20 division's combat engineering company to clear contaminated areas along road march routes and field deployment sites. The TMS-65 is a nozzle-type sprayer, usually used in pairs. The two TMS-65 vehicles park on opposite sides of a roadway, and use a fine spray to decontaminate vehicles passing between their nozzles. Towed truck tank trailers are used with the TMS-65 vehicles to provide an additional supply of water or chemical decontaminant. The AGV-3, employed as a three- 25X1

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vehicle set, is designed to decontaminate clothing and equipment and to provide showers for division personnel. This decontamination set could relocate to different SS-20 field locations to provide personnel-related decontamination. (S

The decontamination unit observed at Novosibirsk includes three types of reconnaissance vehicles, designed for use in varying conditions and terrain: the BRDM-2 RKH, the UAZ-69 RKH, and the RKM. The primary role of all three types is to find safe road march routes to SS-20 field sites. These reconnaissance vehicles would be used to identify the presence of contaminants, determine their concentration, and mark contaminated areas to warn personnel. (S

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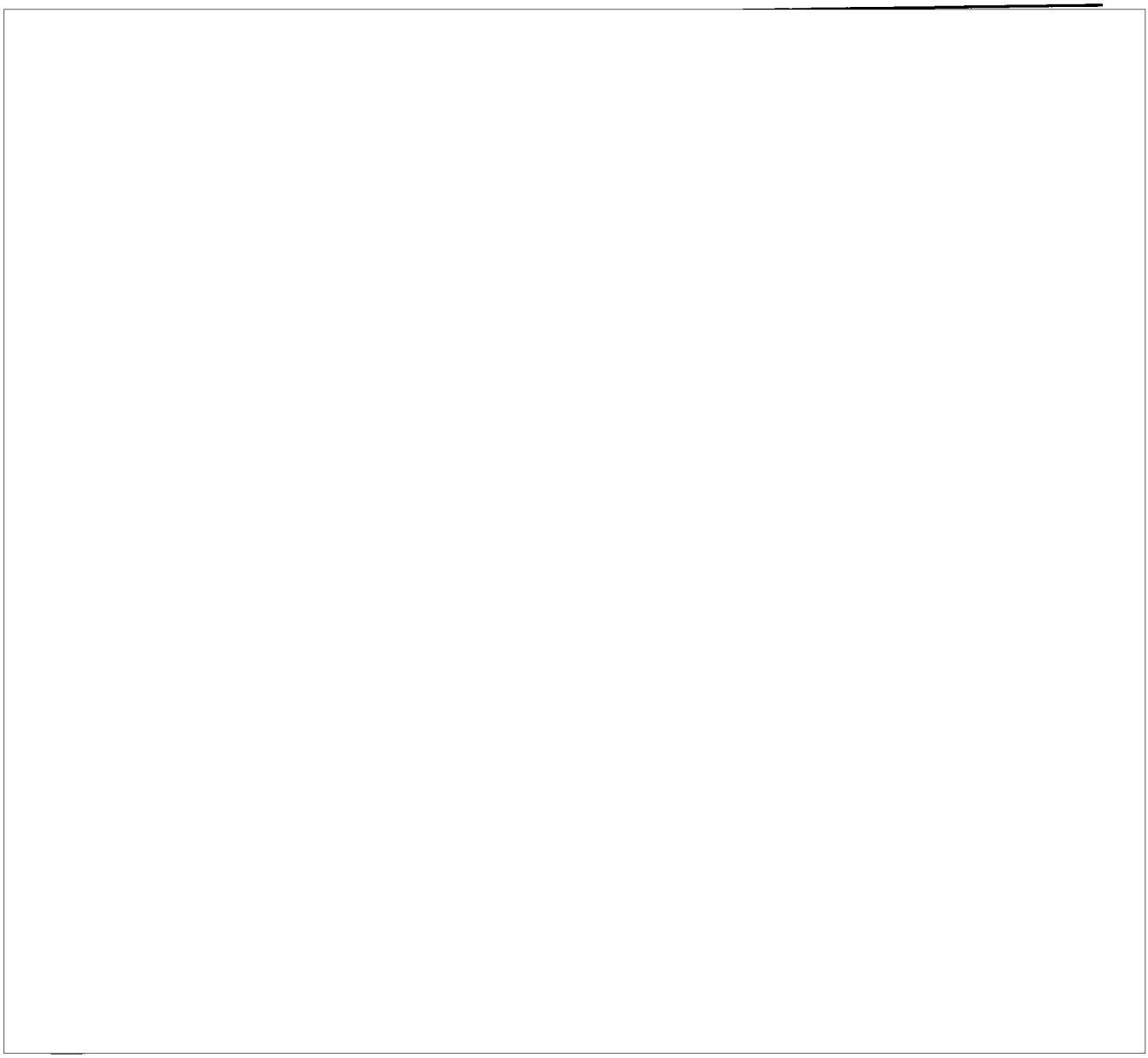
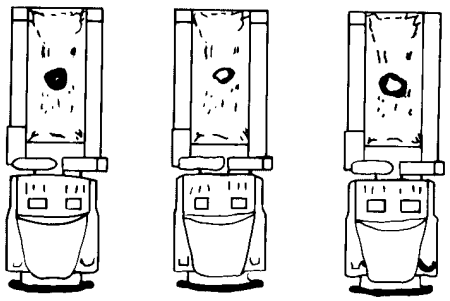
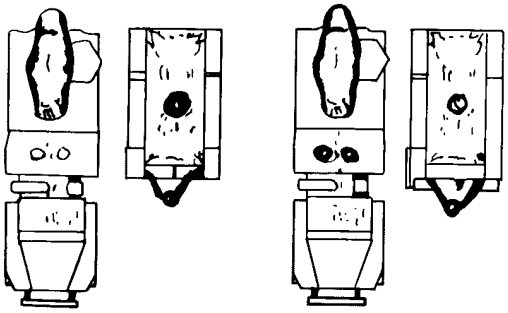


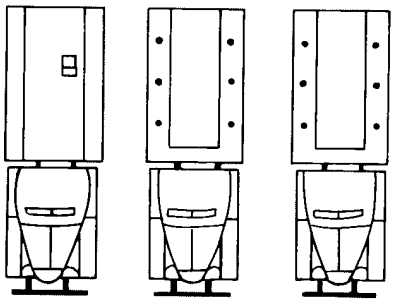
Figure 12
Vehicles Associated With SS-20 Divisional Decontamination Unit



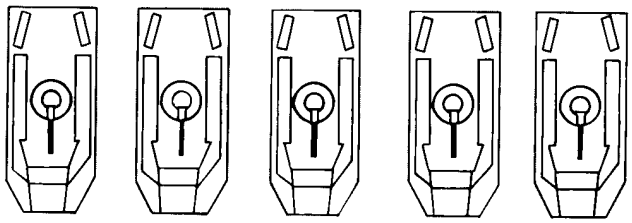
ARS-14
Decontamination Vehicles



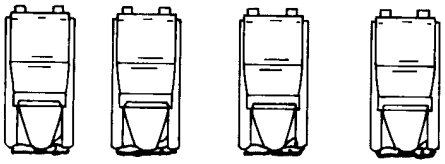
TMS-65 Decontamination Vehicles
With Truck Tank Trailers



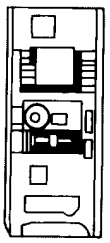
AGV-3
Decontamination Set



BRDM-2 RKH
Reconnaissance Vehicles



UAZ-69 RKH
Reconnaissance Vehicles



RKM
Reconnaissance Vehicle

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New SS-20 Vehicles and Equipment

Missile Support Vehicles

Since 1980, two new types of missile support vehicle (MSV) have been observed: a [redacted] vehicle, [redacted] MSV (figure 13). Both of these new vehicles were observed at Postavy Mobile IRBM Base, parked with standard vehicles in the ground support equipment (GSE) garage area (figure 14). (S [redacted]

The role of these new vehicles is unclear, and the extent of their deployment is not known. Both the [redacted] MSV and the [redacted] vehicle have been observed at the Shumerlya Possile Missile GSE Plant; the [redacted] MSV was probably being outfitted with electronics equipment. A [redacted] MSV has also been observed at the Moskva Guided Missile and Space Research Center, Reutov, where it apparently underwent some kind of electronic emissions testing. Because of the small size difference between the standard [redacted] MSV and the new [redacted] vehicle, it is possible that this new vehicle has been widely deployed but has not been recognized. (S [redacted] 25X1

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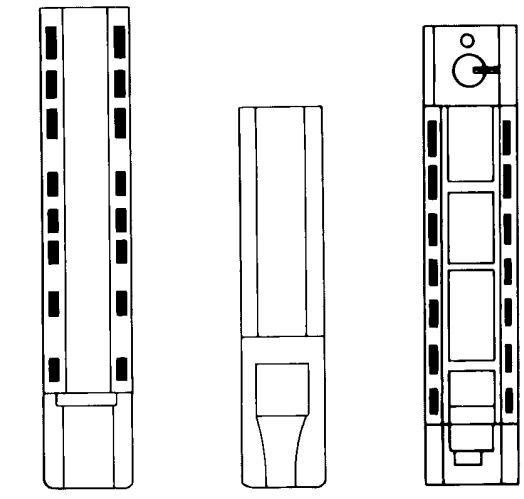
Figure 13
Missile Support Vehicles (MSVs) Associated With SS-20 IRBM Divisions



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Missile Support Vehicle Turrets. Some of the MSVs identified with the SS-20 IRBM system, including both MSVs, have a small turret located on the top of the vehicle near the rear of the van body (figure 15). On two occasions in 1982, MSVs of this type were observed at the SS-20 regimental firing range at Novosibirsk. The vehicles were parked facing away from the range, and the turret barrels were oriented straight back, downrange toward the targets (figure 16). The turret observed on these MSVs may be a standard BTR/BRDM-type gun turret; this would provide an enhanced ground defense capability to SS-20 launch battalions. The turret may also, however, be some sort of optical sighting device; this kind of equipment could facilitate calibration activities during vehicle deployment setups. (S

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Figure 15
SS-20 Missile Support Vehicles With Turret

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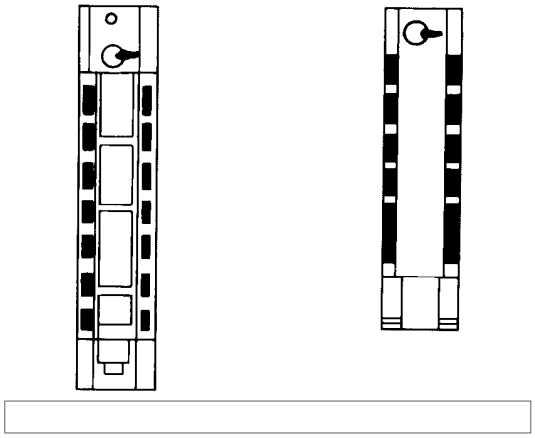

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Missile Support Vehicle Modular Work Stations. A probable modular component has been identified on an MSV undergoing repair at Postavy Mobile IRBM Base. The component station, placed to one side of the MSV, had been removed through a trap door in the roof of the MSV's body, and the hatch of the MSV was open (figure 17). A probable replacement station was observed on a flatbed truck parked next to the MSV. (S

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This type of large modular work station may have any of several functional roles, including communications, computer support, command, and power. A modular system would allow replacement of major MSV subsystems at regimental facilities or out of garrison, and would greatly increase the MSV's operational ease of maintenance. (S

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Driver Training Vehicles

Driver training vehicles have been used with the SS-20 system since the late 1970s. These vehicles are usually garaged in the vehicle maintenance/storage space of the base GSE area. Driver training MSVs can easily be stored in garages, and are indistinguishable on imagery from operational MSVs; they are therefore very difficult to identify outside of training areas. The vehicles used to simulate SS-20 TELs, however, are more readily identifiable. (S

In 1978 the Soviets began using a six-axle modified MAZ-543 chassis to train TEL operators. Starting in 1979 and continuing into the 1980s, these vehicles were gradually replaced by driver training TELs, which are equipped with a training canister instead of a standard missile canister (figure 18). The canister of a driver training TEL has a distinctly different shape than the missile canister of an operational TEL, and it is secured to the TEL by three crossbands instead of the missile canister's five (figure 19). Thus, driver training TELs, now commonly deployed throughout the SS-20 force, can normally be positively identified. (S

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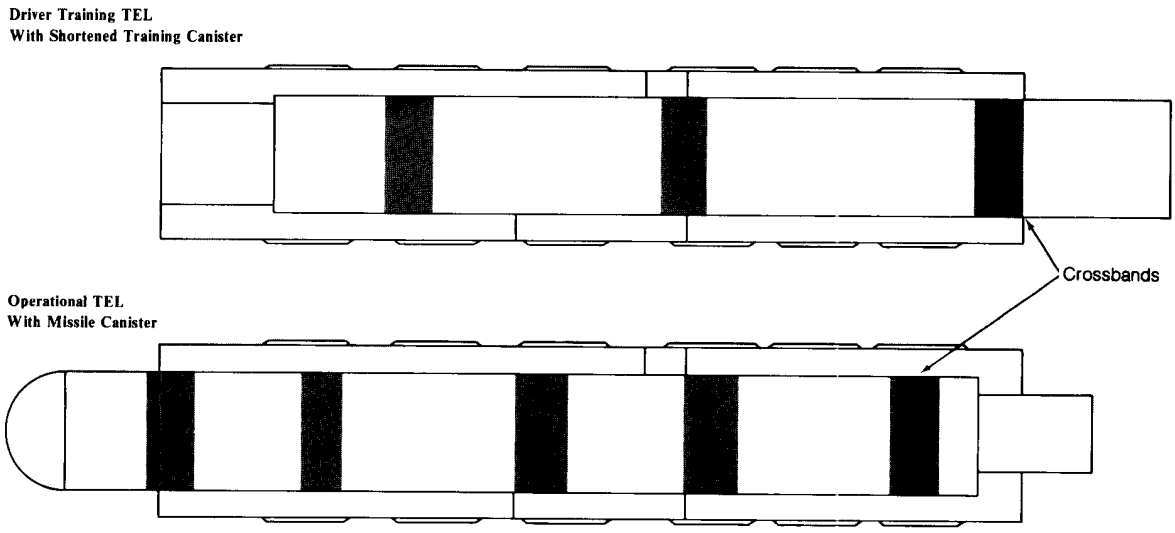
Figure 19
Comparison of Crossbands on SS-20 Training and Operational TELs



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